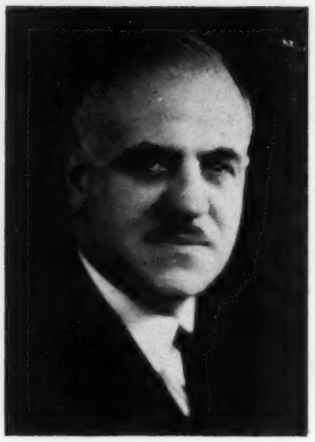
American Foundryman

AMERICAN FOUNDRYMEN'S ASSOCIATION
FOUNDED 1896

...TIES

July
1941

Life Begins at Forty!



WE are inclined to smile at this, although, if we analyze the statement a bit closer, we reach the conclusion that there is actual fact back of it.

In taking over the duties of Executive Vice President of the A.F.A. and analyzing its years since 1896, I cannot help but make the comparison:

Life for the A.F.A. began Forty and Five years ago. It is now of mature judgment, its library a veritable treasury vault of technical data. Its faltering, groping years of childhood are long past, it has been educated by the best teacher, EXPERIENCE, gained in that valuable age of growth, then, 20 years after its inception, it was formally incorporated and adopted a set of By-Laws, mapping out for itself a goal, namely, its objectives. I particularly refer to Article 1, Section 2, which bears repeating:

> "The objects of this Association, as outlined in its articles of incorporation, are to promote the arts and sciences applicable to metal casting manufacture and to improve the methods of production and the quality of castings, to the end that the increasing utility of all classes of castings may result advantageously to all persons engaged in the foundry and related industries and to all users of foundry products."

With this ideal in mind, the youthful organization grew in years and strength. Today it is a proud parent of 21 fine chapters and is of major importance in the world of industry.

If we were to revise the By-Laws, I cannot conceive of a nobler objective. The casting of metals will always be an essential basic industry from which all others will draw their existence and progress. Our aim, therefore, to serve the casting industry through unceasing efforts towards improvement, represents a vital contribution to the world's progress.

The casting industry, centuries ago, solved the problem of "turning swords into plowshares." Why not, then, a concentrated effort within each chapter that our Association may have a part in eventually turning army tanks into scrap to produce bigger and better plowshares and bring the restless, warring nations back to earth?

C. E. Westover

C. E. WESTOVER,
Executive Vice President.

This is the first official communication of Mr. Westover to the membership since assuming his duties as Executive Vice President of your Association. Mr. Westover was appointed to his present position at a meeting of the Board of Directors, held May 15, 1941, Hotel Pennsylvania, New York, following the resignation of C. E. Hoyt, who wished to be relieved from some of his more arduous duties, but who remains with the Association as Convention and Exhibit Manager.

American Foundryman

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Published by the American Foundrymen's Association, Inc., 222 West Adams St., Chicago, Ill., for the purpose of presenting Association and Chapter activities. Published monthly. Subscription price $1.00 per year. Single copies, 10c.

Entered as second class matter July 22, 1938, at the post office at Chicago, Illinois, under the Act of March 3, 1879.

President's Annual Address

Presented at the Annual Business Meeting of the Association, May 14, 1941.
By L. N. Shannon,* Birmingham, Alabama

THE 45th annual convention of our American Foundrymen's Association is being held in a critical period of the nation's history, in a time of intense international strife. Because of this existing condition, it is well at this time to take thought as to what we have done, and can do, for our part as an Association in any national program of preparedness and defense.

The fundamental work of the Association — improvement and development of the casting industry along lines of technical control, manufacturing methods, equipment and shop processes— has been of great importance in placing our industry on a footing whereby it can do its share in the nation's industrial preparedness program.

Objectives Are Sound

Since our Association was founded in 1896 in the neighboring city of Philadelphia, with a sound program of free and helpful exchange of information on new developments, research and practices, we have gone through other periods of unrest and uncertainty, through depressions, through the first world war, through industrial expansions and through political turmoil. By adhering to our fundamental purposes, we have proved our right to growth and expansion. In my intimate association with American Foundrymen's Association over the years, I have observed that our objectives are sound. Our contributions, along technical and educational lines, to the industry we serve, have been well planned and well executed. Each of us has a right to feel a glow of pride in the accomplishments of our Association.

Today we are far stronger than ever before and we can look with confidence to the future of our nation. We can have every confidence in its strength and resourcefulness in meeting emergencies. As we look with confidence to the future of our nation, we can—with equal assurance, with equal confidence—look to the future of our Association. We believe that in times such as these of national preparedness, we have every reason to feel that our work—the work of our many members, our committees—are all of the greatest importance in the national industrial program of production for defense and preparedness.

L. N. Shannon
President, A.F.A., 1940-41

Membership Growth

The value of this work is indicated by the growth of membership, slow at first but far more rapid in recent years, with our greatest growth in the past two years. Because we know (from personal experience, from the experiences of men in our plants, from the experiences of our friends in the industry) that our Association has so much to offer anyone who has the least spark of desire to learn and improve, we have made every effort, this past year, to bring the Association's work to the attention of every foundryman in the country, that they who have not been members would join with us that they might benefit by our collective work and contribute their share to the continuing development of our industry. In concluding my year as president, I am happy to report that we have a total membership of 4,120, as compared with 3,388 as of June 30, 1940. This trend has been a continuous one since 1934, when we were at our post-depression low point. Our success in the membership drive has been possible only by the assistance and willing co-operation of a large number of our members. May I here express my sincere appreciation to Herbert Simpson, Chairman of the Membership Drive, to Ben Claffey, Co-Chairman, to the Membership Chairmen in the various chapters, and to you, each and all, for the splendid work you did in bringing into the fold that inspiring number of new members.

Chapter Work

One important reason for our growth since 1934 has been the organization of chapters, now numbering 21, covering the country from the Atlantic to the Pacific, from Birmingham on the south to Ontario and Twin Cities on the north. The monthly meetings, totaling some 200 a year, bring to our members speakers who explain and discuss new methods, processes and research results. We are especially glad that our chapter movement can now play so important a part in enabling members to receive information on problems involved in the preparedness program. As an illustration, we point to the work of our Ontario chapter, where members find vital aid in solving their problems concerning their intense efforts as a part of the British Empire. For these splendid results, I would like to pay tribute to chapter officers.

Several of the chapters on this side of the border have carried on training work through educational courses, finding young men eager to avail themselves of the opportunity to learn, that they, too, may better serve their country in the present crisis.

*Stockham Pipe Fittings Co.

This activity on the part of our chapters is one which we heartily recommend to all, for through such courses our chapters and their members can aid in training men who are needed more than ever before.

Perhaps you do not realize the extent to which production for defense has become the function of the industrial plants of the nation. Government arsenals produce less than 5 per cent of the munitions required for national defense. The burden upon private industry, therefore, is truly great. And the reliance upon our American Foundrymen's Association, by the industry we represent, for increased aid in its multiplied output, should gladden our hearts. Growth of the help we render is synonymous with growth of our chapters. It is our hope that in time *all* our members may have chapters in their territories, for through chapter activities each member can get so much in acquaintanceship with those working in a common cause.

We recommend that all our company members encourage chapter activity and attendance on the part of their staffs, especially the younger men, for such participation is truly an educational opportunity if these young men are students to any degree, and we believe that the foundry industry does have men of student caliber, willing and anxious to learn.

Publications Give Information

One of our Association's chief contacts with our members is its publications. Our *Transactions, Cast Metals Handbook, Safety Codes, Preprints, Alloy Cast Irons, Lecture Courses, American Foundryman*—all contain papers and reports prepared by members—giving freely experiences and research results. It is interesting to note that our *Cast Metals Handbook* is being used in organized defense training courses as a text book and by engineers seeking the latest data on materials of construction.

Fortunate is the member who has a number of our *Transactions* for they offer the best source of information a foundryman could want in finding answers to many problems which come up daily in his work.

The large number of papers presented at this convention is an example of the material which goes to make up our *Transactions.* We urge young men of our foundries to become members of A.F.A., *use our publications*—for it is through building upon the experiences of others that our industry advances.

Personnel Training

While our work is educational with the major portion being along technical developments, we feel the activities of our foreman and apprentice-training committees deserve special mention. The need for trained personnel in our foundries is paramount.

In 1897 at Detroit, the first technical committee of the Association was appointed to organize training plans for apprentices. Over the years, it has tried to impress foundry management with the need for apprentice training when the need seemed to be declining. In the present crisis we realize more than ever the good work the committee has done.

Anyone wanting to start foundry training could, through A.F.A. papers, find answers to any problem which might arise. During the past few years, our apprentice training committee has developed recommendations (which have been approved as A.F.A. standards) for four-year apprentice courses in the foundry and pattern shop. These recommendations are now in constant demand and the Association is giving them freely, not only to the industry, but to the many schools and training organizations of the industrial groups. We recommend that our members study the material this committee has published. We are fortunate that we have this material recorded now, instead of having to wait for it in this emergency.

The work of our foreman training committee is equally important. The duties of the foreman have changed, broadened and become especially important as the contact between management and men has grown more pertinent. We recommend that our chapters this year stress the foreman training work in their programs.

Research

Advancement of an industry depends upon constant research and application of its findings in practice. A.F.A. has, from its beginning, been a force in research in the foundry industry. Much of this research has been done by individuals and their work, gathered with that of the Association, published for the benefit of industry as a whole, has been of incalculable value.

Certain research work is best conducted through co-ordinating individual effort in committees. Outstanding committees have been those of Sand Research, Standards of Casting Qualities, Safety and Hygiene Codes, Radiography, Fluidity Testing, Refractories and Design. The reports of these committees and many others of our Steel, Malleable, Gray Iron, Non-Ferrous and Patternmaking Divisions have been of the greatest value, and are all available for study for future work.

Two new committees whose work we will watch with interest are Cupola Research and the Committee on Analysis of Casting Defects.

Committee Service

We are fortunate in having members who are willing to devote time and effort on these projects and in having company members who are willing for their staffs to devote time to this co-operative progress. The work of our Association is undoubtedly of the highest standard, because it draws from their respective positions our country's most talented, competent, efficient business men. These men willingly and gladly drop their own important duties to give of their time and effort to A.F.A. activities. Never before have I observed any group of men so wholeheartedly enthusiastic in their devotion to extra-curricular affairs. The caliber of these men and the vigorous manner in

which they undertake our problems is proof that our Association work holds more attraction and provokes more interest than probably any similar organization in the United States.

A less superior membership and work would be unworthy of the splendid staff which heads our organization. I could not relinquish my presidential post without saying how much I have enjoyed working with the loyal, unselfish group who reign at A.F.A. headquarters. To Ed Hoyt, Bob Kennedy, Penny Jones, Norm Hindle and Jennie Reininga go my warmest thanks for their unfailing support on every occasion. When I considered the imposing group of men who had preceded me as president of American Foundrymen's Association, I was awed with the honor you had conferred upon me. But as I turned the pages of the calendar, not one day brought any task too great to perform with the ever-present help of the staff, the officers, directors, committee - chairmen, committee members. I know now why no A.F.A. president has lacked courage in fulfilling his office and why no future president need fear for the success of his administration. The personnel of American Foundrymen's Association does not let a fellow down.

Friendship and Cooperation

An intangible benefit of our Association is the golden opportunity it affords for our forming lasting friendships with men of mutual interests. That such friendships have been formed and continue to develop each year is clearly evidenced at our Annual Conventions. To me it is a real treat just to watch the greetings, reunions, introductions and good fellowship—so definitely a part of these meetings. I am remembering the old-timers, some retired, some infirm, who refuse to abandon the happy spirit of our Association and come back to our conventions year after year. We each have something to give the other and and grow bigger, ourselves, while building our industry and Association through love and cooperation rather than competition.

You and I are aware of the place our Association has in the national program. With our records of recent years to aid in putting our plants on the highest peak of production, with our great force of research workers to give us new equipment, new methods, better castings, we will meet our obligation. We are a great force. Following our motto

"Coming together is a beginning
Working together is progress
Keeping together is success"

we, the American Foundrymen's Association, stand ready to do our part and more than our part.

Apprentice Patterns to be Available to Chapters for Meeting Discussions

THROUGH the courtesy of Frank C. Cech, instructor in patternmaking, Cleveland Trade School, Cleveland, Ohio, vice chairman of the Patternmaking Division of your Association and an active member of the Apprentice Training Committee, the patterns entered in the National Apprentice Contest will soon be made available to A.F.A. chapters for discussion purposes. The idea was advanced some time ago that a discussion of the various methods of construction might serve as the basis for a round table type discussion at a monthly chapter meeting. Several chapters, hearing of the idea, expressed an interest, stating that they would like to have the patterns for just such a discussion.

The only difficulty was obtaining a container for the patterns so that they could be shipped from chapter to chapter during the coming season. Mr. Cech volunteered to make such a container and so it can now be announced that the patterns will be available.

Mr. Cech long has taken an active part in the work of the Apprentice Training Committee, particularly in the patternmaking contest. Nearly every year, one of his Cleveland Trade School boys has been a prize winner. For the past two years, following the national contest, he has written a summary of the pattern entries, pointing out their strong and weak points. Mr. Cech has consented to do the same for the 1941 contest entries.

In performing this interesting task, he has sowed a seed that is now beginning to bear fruit. As a result of his articles another member of the Apprentice Training Committee, C. W. Wade, Caterpillar Tractor Co., Peoria, Ill., has offered to review the gray iron castings entries and J. G. Goldie, instructor in foundry practice, Cleveland Trade School, Cleveland, Mr. Cech's co-worker and chairman, Apprentice Training Committee, the steel and non-ferrous castings. These resumes will be published in a future issue of *American Foundryman.*

C. M. Henderson Dies

CLARENCE M. HENDERSON, president, Macaulay Foundry Co., Berkeley, Calif., one of the organizers and first chairman of the Northern California chapter, died at his home in Oakland, Calif., May 18. He was 66 years old.

Born in San Francisco, he served his apprenticeship under his uncle. He became secretary and general manager of the H. C. Macaulay Foundry Co. when the company was organized in 1906, and served in that capacity until the death of H. C. Macaulay in 1938, when he became president.

In addition to his interest in A.F.A. activities, Mr. Henderson was a member of the Northern California Foundrymen's Institute and the National Association of Manufacturers.

New Service Building For Tractor Foundry Employees

THE new foundry employees' service building, Caterpillar Tractor Co., Peoria, Ill., is widely regarded as a model structure because of its spaciousness, convenience and cleanliness. Designed by T. J. Connor, vice president, and M. J. Gregory, factory manager, foundry division, the service building is both attractive and practical.

The building is of brick; is 264 ft. long by 91 ft. wide; is one story high, with the exception of a two-story wing, 91 by 80 ft. Fully equipped, it cost $145,000.

A corridor parallels the length of the building and is 12 ft. wide. Inner walls are of salt-glazed brick, punctuated by windows of self-washing corrugated glass. The floor is concrete.

New Shoe-Cleaning Method

Dirt on worker's shoes, picked up while in the shop or walking to and from the building, is scraped off on a large metal grating, which covers a pit where running water, pumped from the company's artesian wells, carries off refuse. A deep cocoa mat perfects the shoe cleaning operation. Proud of the fine facilities and wishing to do their part in maintaining them, employees empty their pipes and toss their cigarettes into one of a series of narrow grate-covered traps, all a part of the subterranean water cleaning system (Fig. 1). This method apparently is new in buildings of this type.

Locker Rooms

The locker and shower room is 75 by 184 ft. The doors have screens that are doubly protective, shutting off the room from the gaze of those in the corridor, and at the same time controlling traffic of men entering and leaving.

The floor is of terrazzo, in the center of which, evenly spaced over the 184 ft. length, are nine circular wash basins (Fig. 2—left), each capable of accommodating several men. Extending in bisecting rows to the walls on both sides, are steel lockers and benches. Centrally located are laundry and towel cabinets. In all, there are 1,600 lockers and two sets of laundry and towel cabinets. Individual heat units are situated overhead.

Fresh air, constantly circulating through the building, maintains a steady flow through the lockers, entering top louvers and emerging through perforated bottoms. This keeps clothes in good condition and draws away all locker odor.

The room also contains four shower bath sections, each having twenty sprays (Fig. 2—right). These shower groups have black and white tile floors, inner and outer walls and marble partitions. Antiseptic footbaths, shaving facilities and canopies, or hoods, which carry away steam vapors are other features. These

Fig. 1—Employee emptying pipe over grate trap under which flows a water cleaning system that carries away refuse.

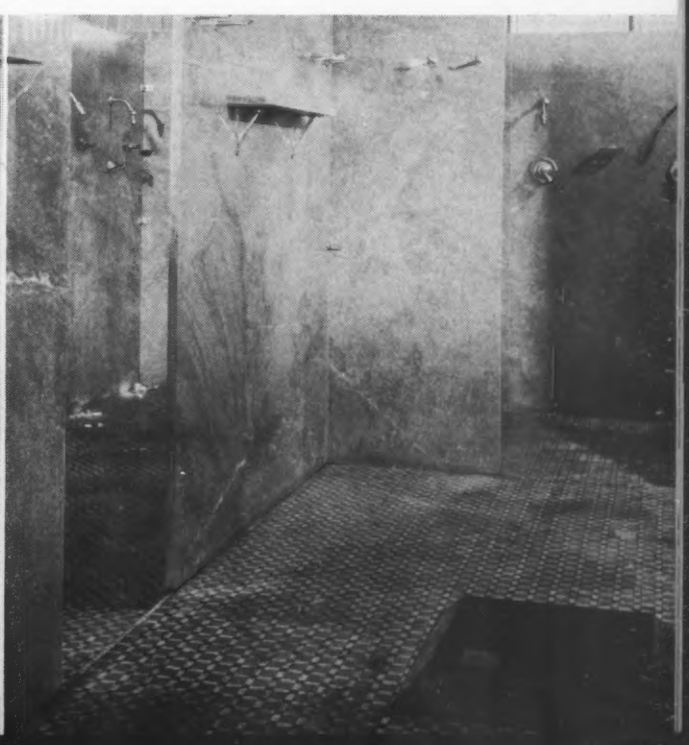


Fig. 2—(Left) View of the locker-shower room showing the facilities mentioned in the article. (Right) Inside view of shower section. Note antiseptic foot bath in lower right hand corner.

sections are flanked by more of the corrugated glass, whereas windows admitting light to the lockers is provided by glass block windows, freely used throughout the building.

Hot water for showers and other purposes is steam heated by two instantaneous water heaters of 3,000 gal. per hr. capacity each. Three hot water tanks of 2,500 gal. capacity each provide a reservoir for peak loads. During peak loads, occurring at changing of shifts, hot water is used at the rate of 10,000 gal. per hr. Warm water for the showers and washers is supplied at correct temperature by thermostatic water controllers which mix hot and cold water in proper proportion before it reaches the fixtures.

Cafeteria

The service building also houses a cafeteria, 75 by 40 ft., seating 196 men at neat tables, equipped with retractible seats. In addition, benches line the lounging corridor for those who bring their lunches.

Wholesome food is brought into the service building from the main cafeteria and served efficiently and economically to the men. A complete selection of food is available at low cost. The room is air-conditioned and approximately 500 meals are served daily, lunch periods being staggered so that all who wish to avail themselves of the cafeteria may be served. However, use of the cafeteria seating facilities is not limited to those who purchase their lunches. Employees carrying their lunches may use them, perhaps adding a cup of cafeteria coffee to their menu.

First Aid Room

The first aid room (Fig. 3), staffed by nurses 16 hours per day, is located conveniently and opens both on the corridor and on a driveway at the rear of the building. It has tile and plaster walls, terrazzo floor and up-to-the-minute equipment, such as screens, sterilizer, eye chair, medical cabinets, work tables, cots and stretchers. If X-ray or specialist facilities are needed, they are available at the main

Fig. 3—Nurses on duty 16 hours a day have modern and efficient equipment in their First Aid room.

first aid quarters of the company. Should it be necessary to summon an ambulance, the driver is able to back almost into the room by the rear driveway.

Metallurgical Laboratory

At the rear of the service building is the metallurgical laboratory, where all chemical analyses on foundry samples and raw materials, such as sand, coal, coke, core oil and limestone, are run. The room is air-conditioned. A large hood over the hot plate draws off irritating fumes. A wooden block floor is easy on the feet of laboratory workers.

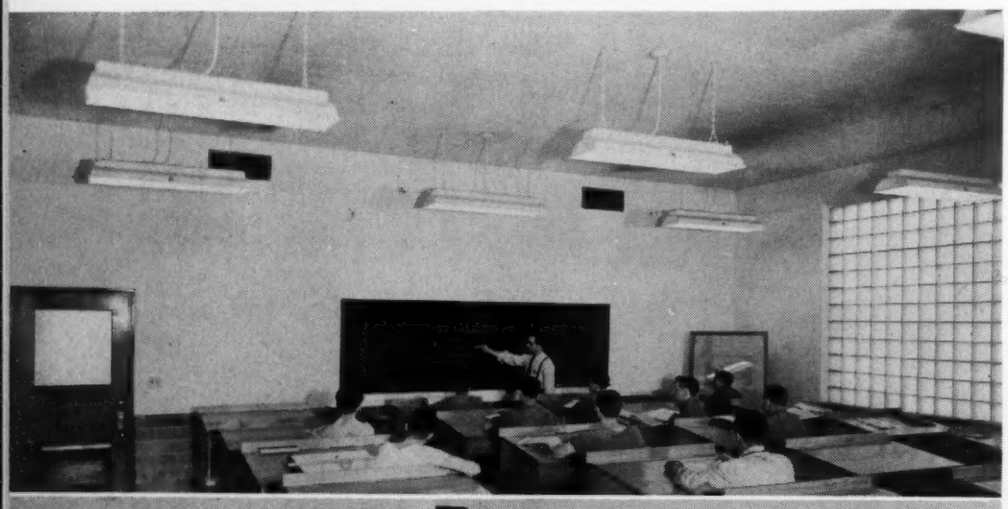
Personnel Training Rooms

On the second floor are located the factory training classroom, a foreman's conference room (Fig. 4—bottom) and a 40 by 90 ft. office, where employees engaged in all phases of foundry planning and foundry supervision have their quarters. The entire second floor is air-conditioned, has fluorescent lighting and plenty of elbow room.

The foundry and patternmaking apprentice classroom (Fig. 4—top) is a pleasant room where apprentices spend three hours each week studying mathematics, mechanical drawing and related subject material in conjunction with their work in the shop. The room accommodates 48 apprentices. Two instructors teach practical as well as academic subjects.

The conference room is equally

Fig. 4—(Top) Apprentices attending a class in the apprentice classroom. (Bottom) A supervisory group attending a conference in the foreman's conference room.



spacious with an adequate supply of large tables and chairs, providing a comfortable setting for all sessions. It also provides a place for foremen to make out and check their reports.

The building, inside and out, is modern, practical and handsome, and can serve as a model for many plants of our industry.

Three Generations of Patternmakers

PATTERNMAKING is one of the seven wonders of the industrial world. From generation to generation, the profession has been passed from journeyman to apprentice to help make this a better world in which to live. Not often is it possible to cite the story of three generations of patternmakers, covering a period of 54 years (1887-1941).

Edward G. Borgnis started this story on November 29, 1887, when he entered into an agreement to start as an apprentice patternmaker for The Weisel & Vilter Mfg. Co., Milwaukee, Wis. This company was "to pay him, in the first year $3.00 per week of sixty (60) working hours, in the second year $4.00 per week, in the third year $5.00 per week and in the fourth year $6.00 per week." Mr. Borgnis completed his contract in 1891 and later entered the employ of the Falk Corp., Milwaukee, Wis. He severed his connection with that concern and was made Wisconsin representative for the International Molding Machine Co., Chicago, Ill. Mr. Borgnis recently retired from this position and the foundry industry after many years of faithful service.

The second party in our story appeared at the Falk Corp. on July 12, 1906. His name is William Schaper. He started as an apprentice patternmaker with Edward G. Borgnis signing his apprentice contract. In this contract, the apprentice's time was divided into hours instead of years. The term consisted of 11,520 hours divided into five periods. The first two periods consisted of 1,440 hours and the other three periods were of 2,880 hours duration. At the completion of each period, an increase in the apprentice's hourly rate was granted. A bonus of $100.00 was paid him "on the first pay day following the completion of the aforesaid 11,520 hours." Mr. Schaper completed his contract September 8, 1910, and later entered the employ of the Sivyer Steel Casting Co., Milwaukee, Wis. He is pattern superintendent at the above concern, a position he has held for the past 10 years.

The third character to enter this study is George Rebatzki, Jr., who on August 10, 1925,

George Rebatzki, Jr.

started as an apprentice patternmaker with the Sivyer Steel Casting Co. Mr. Schaper signed Mr. Rebatzki's contract as a representative of the company. Mr. Rebatzki was to work eight periods of 1,220 hours, or a total of 9,760 hours. His schedule included six months shellacking, six months wood turning, three months metal patternmaking and the remainder bench work and making patterns. He received 22½ cents per hour the first six months with increases every six months. A bonus of $100.00 was paid to the apprentice upon completion of his indenture. Mr. Rebatzki completed his contract as patternmaker and is employed at the shop in which he was trained.

It is interesting to note the improvements and changes made since the time Mr. Borgnis entered into the foundry industry. Mr. Borgnis was required to work 60 hours a week, or, over a four year course, 12,480 hours. In comparison Mr. Schaper was trained in 11,520 hours and Mr. Rebatzki in 9,760.

The difference in wages is quite interesting, too. Mr. Borgnis worked for 5 cents an hour the first year, while Mr. Rebatzki received 22½ cents an hour the first six months.

Weekly wages went up over 300 per cent from 1887 to 1925 and working hours were cut one-third. Mr. Borgnis received $3.00 each week for 60 hours work while Mr. Rebatzki earned $9.00 per week for 40 hours.

The three companies in this article, The Weisel & Vilter Mfg. Co. now the Vilter Mfg. Co., have been extremely active in apprentice training work. They all have been especially interested in this problem for the past few years, as they sensed the effect that the National Defense Program would have on this type of work. It has been through such companies as these that many progressive steps in apprentice training have been made.

William Schaper (right) congratulates Ed. Borgnis (left) on his retirement.

Important!

Papers for 1942 Convention

MEMBERS of the Association who wish to present papers at the 1942 Convention of the Association, are invited to notify the Secretary, American Foundrymen's Association, 222 West Adams St., Chicago, Ill., of the title and content of the paper or to submit the manuscript for review by the Program and Papers Committee. Early submission of manuscripts is urged as the deadline for submission is January 1, 1942.

Members also are invited to suggest topics which they believe should be covered by papers for the various sessions and to list names of those whom they believe should be invited to prepare the papers.

Australian Foundrymen Publish First Proceedings

THE Institute of Australian Foundrymen, the newest technical organization in the world foundry industry, has published the first issue of its *Proceedings*, covering some of the papers presented during the years 1938, 1939 and 1940.

Organized on April 19, 1939, by a group of foundrymen of the Melbourne district, with objectives similar in character to those of your own Association, the Institute of Australian Foundrymen is a little over two years old.

It was organized as the result of a demand for a foundry technical association in Australia. For several years, it had been talked about but, like Mark Twain said about the weather, "nobody did anything about it." On July 18, 1938, A. A. Robertson, head, department of metallurgy, Melbourne Technical College, sent a letter to foundrymen within the Melbourne district asking them to express their opinion concerning the formation of a foundry technical association covering all branches of the foundry industry as distinct from the trade associations which already existed. He suggested that all parties interested should meet at the college on July 21 to discuss the project. He received 21 replies and at the meeting, which 14 attended, committees were appointed to study the organization, draw up by-laws, and prepare a list of those who might be interested.

On August 24, 1938, a second meeting was called, attended by over 70 foundrymen, at which a report of a committee, composed of R. A. Cheers, Messrs. A. Cheers & Co.; W. Hewett, Broken Hill Prop. Co., Ltd.; A. A. Robertson, Melbourne Technical College; and W. T. Main, Messrs. T. Main & Sons Pty. Ltd., presented a draft of a proposed constitution. Following a discussion of objectives of the proposed organization, as well as types of membership, a motion was made that "this meeting is in favor of the formation of an Australian Institute of Foundrymen with headquarters in Melbourne, and that branches be formed in the principal industrial centers of Australia." A provisional committee was elected with Mr. Main as chairman and B. F. Russell, Russell Mfg. Co. Pty. Ltd., as the secretary.

The inaugural meeting was held on April 19, 1939, at Kelvin Hall, Melbourne, with 150 persons interested in the foundry industry present. The provisional committee was elected as the official council for the year and the constitution adopted.

Thus came into being the youngest member of the family of foundry technical associations in countries throughout the world. To it, the A.F.A. extends its best wishes for continued accomplishment and growth.

It is interesting to note that at least one officer of the Institute, Mr. Cheers, is a member of the American Foundrymen's Association. In all, A.F.A. has 35 members in Australia.

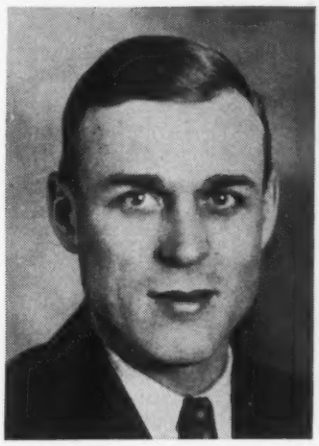
George Washington as a Foundryman

FROM E. C. Meagher, Chicago Retort & Fire Brick Company, comes a picture of the ruins of an old foundry built by George Washington. Very few of our present-day foundrymen realize how extensive and widespread were the interests of the Father of Our Country. The ruins of the foundry which are shown in this picture are located on the Potomac River twelve miles up from Washington on the Virginia side.

Remains of foundry built by George Washington.
(Photo courtesy E. C. Meagher, Chicago Retort & Fire Brick Co.)

NEW CHAPTER CHAIRMEN

J. A. Bowers
American Cast Iron Pipe Co.,
Birmingham, Ala.
Chairman,
Birmingham District Chapter



F. J. Dost
Sterling Foundry Co.,
Wellington, Ohio
Chairman,
Northeastern Ohio Chapter

L. L. Henkel
Interlake Iron Co.,
Chicago, Ill.
Chairman,
Chicago Chapter

A. C. Ziebell
Universal Foundry Co.,
Oshkosh, Wis.
Chairman,
Wisconsin Chapter

H. Reitinger
U. S. Cast Iron Pipe & Foundry
Co., Burlington, N. J.
Chairman,
Phila lphia Chapter

C. Morken
Carondelet Foundry Co.,
St. Louis, Mo.
Chairman,
St. Louis District Chapter

E. C. Madson
Anderson Foundry Co.,
Bayport, Minn.
Chairman,
Twin City Chapter

H. B. Harvey
Indiana Foundry Corp.,
Muncie, Ind.
Chairman,
Central Indiana Chapter

E. C. Bumke
Oliver Farm Equipment Co.,
South Bend, Ind.
Chairman,
Michiana Chapter

N. B. Clarke
Steel Co. of Canada, Ltd.,
Hamilton, Ont.
Chairman,
Ontario Chapter

G. K. Minert
Gunite Foundries Corp.,
Rockford, Ill.
Chairman,
Northern Illinois-Southern
Wisconsin Chapter

V. A. Crosby
Climax Molybdenum Co.,
Detroit, Mich.
Chairman,
Detroit Chapter

NEW MEMBERS

(May 20 to June 18, 1941)

Conversions

Company from Personal

Milwaukee Chaplet & Mfg. Co., Milwaukee, Wis. (Paul F. Rice, President)

George M. Pendergast & Co., Inc., Milwaukee, Wis. (George M. Pendergast, Pres.)

United States Radiator Corp., Geneva, N. Y. (Lloyd D. Wright, Supt.)

Birmingham Chapter

Alabama Polytechnic Institute, Auburn, Ala.

T. A. Ripley, Research, National Cast Iron Pipe Co., Tarrant, Ala.

Chesapeake Chapter

S. F. Cartin, Fdry. Supt., T. B. Woods Sons Co., Chambersburg, Pa.

Frederick R. Gibson, Apprentice Molder, Norfolk Navy Yard, Portsmouth, Va.

Henry R. Kastelberg, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

James S. Munden, Apprentice Molder, Norfolk Navy Yard, Portsmouth, Va.

Chicago Chapter

Fred J. Schmidt, Production Mgr., Sivyer Steel Casting Co., Chicago, Ill.

Cincinnati Chapter

Serge Beliaeff, Sr. Chemist, Wright Aeronautical Corp., Lockland, Cincinnati, Ohio

Stanton T. Olinger, Supv., Industrial Gas Div., Cincinnati Gas & Elec. Co., Cincinnati, Ohio

Kenneth H. Taylor, Sub-Foreman, Core Shop, Alum. Fdry., Wright Aeronautical Corp., Lockland, Cincinnati, Ohio

H. H. Walther, Met., Dayton Steel Foundry Co., Dayton, Ohio

Detroit Chapter

*Pontiac Motor Division, General Motors Corp., Pontiac, Mich. (O. L. Allen, Fdry. Supt.)

Metropolitan Chapter

Harry G. Lamker, Supt. of Fdries., Wright Aeronautical Corp., Paterson, N. J.

*Lithaloys Corporation, New York, N. Y. (Dr. Hans Osborg, Vice President)

Joseph W. Thompson, Foreman, American Steel Castings Co., Newark, N. J.

Northeastern Ohio Chapter

Joseph Schwab, Fdry. Supt., Skinner Engine Co., Erie, Pennsylvania

*J. A. Zurn Mfg. Co., Erie, Pa. (E. M. Rieger, Supt.)

Northern California Chapter

Philip McCaffery, Met., General Metals Corp., Oakland, California

Lester Rasmussen, Molder, Vulcan Foundry Co., Oakland, Calif.

John W. Steele, Molder, Enterprise Engine & Foundry Co., San Francisco, Calif.

Ontario Chapter

*Bowmanville Foundry Co., Ltd., Bowmanville, Ont., Canada (C. E. Rehder, Vice President and Manager)

Philadelphia Chapter

John W. Swengel, Molding Mach. Foreman, American Chain & Cable Co., Inc., Reading, Pa.

John W. Young, Molding Foreman, American Chain & Cable Co., Inc., Reading, Pa.

Quad-City Chapter

Al Mourisse, Foreman, International Harvester Co., Rock Island, Ill.

Rudolph Taffs, Foreman, International Harvester Co., Rock Island, Ill.

St. Louis Chapter

Henry P. Bentrup, Fdry. Supt., Carondelet Foundry Co., St. Louis, Mo.

Southern California Chapter

Herbert Withrow, Molder, Kinney Iron Works, Los Angeles, Calif.

Twin-City Chapter

*American Brake Shoe & Foundry Co., Brake Shoe & Castings Div., Minneapolis, Minn. (J. J. Marka, Plant Supt.)

*American Hoist & Derrick Co., St. Paul, Minn. (Charles Phillips, Fdry. Supt.)

H. J. Bierman, Co-Partner, Acme Foundry Co., Minneapolis, Minn.

Robert W. Bingham, Production Supervisor, American Hoist & Derrick Co., St. Paul, Minn.

Sidney Bumgardner, Jr., Asst. Foreman, American Hoist & Derrick Co., St. Paul, Minn.

I. F. Cheney, Supt., Griffin Wheel Co., St. Paul, Minn.

*The Commutator Co., Minneapolis, Minn. (R. D. Boneau, President)

R. A. Coolidge, Salesman, Koppers Company, St. Paul, Minnesota

Arthur V. Dahlin, Fdry. Foreman, American Hoist & Derrick Co., St. Paul, Minn.

*Diamond Iron Works, Inc., Minneapolis, Minn. (L. J. Reay, President)

*Flour City Ornamental Iron Co., Minneapolis, Minn. (Arthur Tetzlaff, Fdry. Supt.)

E. R. Frost, Pres., E. R. Frost Co., Inc., Minneapolis, Minnesota

Carleton C. Hitchcock, Fdry. Supt., R. C. Hitchcock & Sons, Minneapolis, Minn.

Gordon W. Johnson, Metallurgist, American Hoist & Derrick Co., St. Paul, Minn.

Edward Morse, Foreman, American Hoist & Derrick Co., St. Paul, Minn.

*National Bearing Metals Corp., St. Paul, Minn. (H. E. Connors, Dist. Mgr.)

*C. W. Olson Mfg. Co., Minneapolis, Minn. (Carl W. Olson, Jr., Fdry. Mgr.)

E. Olson, Fdry. Supt., R. R. Howell Co., Minneapolis, Minnesota

Chester R. Pomorski, Molder, American Hoist & Derrick Co., St. Paul, Minn.

Eugene H. Ryan, Prop., St. Paul Brass Foundry Co., St. Paul, Minn.

*Scott-Atwater Foundry Co., Minneapolis, Minn. (J. C. Clements, Mgr.)

Clark A. Smith, Fdry. Sales & Prod. Mgr., Smith System Heating Co., Minneapolis, Minn.

*Smith-Sharpe Co., Minneapolis, Minn. (Axel F. Carlstrom, Salesman)

*South Park Foundry & Machine Co., St. Paul, Minn. (J. N. Brawley, Sec'y-Treas.)

*Western Alloyed Steel Casting Co., Minneapolis, Minn. (C. C. Hess, Works Mgr.)

Robert C. Wood, Vice Pres., Minneapolis Electric Steel Castings Co., Minneapolis

Western New York Chapter

Ray M. Walter, Vice Pres. & Mgr., Buffalo Pattern Works, Inc., Buffalo, N. Y.

Wisconsin Chapter

*Armstrong Foundry Co., Racine, Wis. (Wm. H. Armstrong, Pres. & Treas.)

Val W. Ove, Milwaukee, Wis.

George Radulovich, Molder, Ampco Metal, Inc., Milwaukee, Wis.

Lloyd Romenesko, Metal Processor, Kaukauna Machine Corp., Kaukauna, Wis.

J. W. Marshall, Fdry. Supt., Solvox Flux Co., Milwaukee, Wisconsin

*Company.

Outside of Chapter

Philip John Ayckbourn, Mgr., Cambrian Engineering Co., Ltd., New Plymouth, New Zealand

Alfredo B. Gatti, Director Gerente, Cia. Argentina De Talleres Industriales, Transportes Y Anexos, S. A. (Catita), Buenos Aires, Argentina

*Company.

E. F. Mattison, Foreman, Ohio Steel Foundry Co., Lima, Ohio

Dr. F. Meyer, Works Mgr., South African Iron & Steel Industrial Corp., Ltd., Pretoria West, South Africa

Officer-in-Charge, Yard Testing Laboratory, Industrial Dept., U. S. Navy Yard, Pearl Harbor, T. H.

Z. W. Zinss, General Alloys Co., Boston, Mass.

Book Reviews

Engineering Materials, by A. H. White, Chairman of Department of Chemical and Metallurgical Engineering, University of Michigan, Ann Arbor, Mich. First Edition, cloth bound, 547 pages, 200 illustrations, 75 tables, published by McGraw-Hill Book Co., New York. Price $4.50.

This book, although intended primarily as a student text, is also designed to be of interest to practicing engineers. It is one of the few books on such a subject to which a proper amount of space is given to the products and processes of the foundry industry and for this reason should be of interest to foundrymen. As its name implies, the contents are not confined to metals although information on this subject occupies an important part of the book. The reviewer believes the book to have good balance with respect to the subjects covered.

Following the introduction, devoted to a discussion of the theories involved, the next 14 chapters of the book deal with metals, covering iron-carbon alloys, their heat treatment; manufacturing methods for pig iron, wrought iron and steel; influence of composition on carbon steel; properties of plain carbon steel; casting processes; gray and malleable cast iron; alloy steels; alloys of copper, nickel, zinc, tin, aluminum, magnesium and light alloys; lead; corrosion and protection of metals.

The remainder of the book is devoted to engineering materials other than metals such as clay products; glass, slag, refractories; lime, gypsum and magnesium oxychloride products; cements; fuels and combustion; water and soaps; organic preservative materials and protective coatings; and, finally, plastics and related products.

This reviewer would say that the book covers the field of engineering materials in a very comprehensive manner for the student. Practicing engineers will find in it fundamentals and for those who desire additional information on the respective subjects, a list of references is appended to each chapter. For the foundryman, it gives information about the products with which he is in competition.

Transactions, American Institute of Mining and Metallurgical Engineers, Iron and Steel Division, vol. 140, cloth bound, 514 pp. New York City, N. Y.

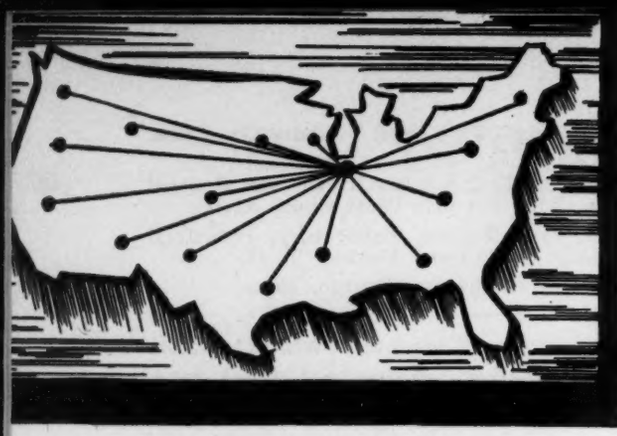
The recent published volume of *Transactions,* A.I.M.E., Iron and Steel Division, contains 22 technical papers with complete discussions. There are in this book six papers which probably would be of interest to the foundryman. Among one of the most important papers included in the book is C. H. Herty, Jr's., Howe Memorial Lecture on "Slag Control." Some of the other papers include "Slag-metal Relationships in the Basic Open-hearth Furnace," by Karl L. Fetters and John Chipman, which makes worthy reading for steel men. The article on "Formation of Inclusions in Steel Castings," by Walter Crafts, John J. Egan and W. D. Foreng, is an important paper on steel castings. Charles R. Austin and Carl H. Samans wrote an interesting artiticle on "Effects of Temperature of Pretreatment on Creep Characteristics of 18-8 Stainless Steel at 600° to 800°C." The technical publication, "A New Instrument for the Magnetic Determination of Carbon in a Steel Bath," by H. K. Work and H. T. Clark, is of major significance. J. W. Halley's article on "Precipitation-hardening of a Complex Copper Steel" concludes the list of probable papers. Comment should be made on the section concerning steelmaking which was organized by the Physical Chemistry of Steelmaking Committee. Among those papers listed above this volume also contains four articles contributing to the art and science of making pig iron and five papers dealing with stainless steel.

Serve Your Industry Through Committee Activity

SOME years ago, Dr. H. W. Gillett, internationally known metallurgical authority, in speaking about young men who wish to advance themselves in their industry, enumerated the methods that might be used. Among the methods mentioned was committee service. Dr. Gillett stated: *"A more effective way is to seek out a committee—asking only to help and learn. The committee meetings would become open to him and the more intimate contacts thus made are of the type that are most useful."*

The "life-blood" of any technical society or association is its committees who do the work. Of necessity, such work must be done by interested individuals who are willing to contribute freely of their time and experience that the industry, of which they are a part, may progress. They realize that as their industry progresses, they progress in proportion to the contributions they make to that industry. So it has been with the foundry industry. Those who have contributed most have progressed most.

Your Association now is in the process of appointing its committees for the 1941-42 year. If you are not now serving on a committee and wish to do so, please notify the Secretary, American Foundrymen's Association, 222 West Adams St., Chicago, Ill., concerning the committee or activity in which you are most interested.



Chapter Activities

West Coast Regional Conference Held During Western Metals Congress

WITH an outstanding program, excellent speakers and fine attendance, the joint Regional Conference of the Southern and Northern California chapters, held during the Western Metals Congress at the Biltmore Hotel, Los Angeles, May 22 and 23, was a grand success. More than 175 attended the banquet of the foundry group the evening of May 23.

The program began on Thursday morning, May 22, with Dr. C. H. Lorig, Battelle Memorial Institute, Columbus, Ohio, as the speaker. Dr. Lorig spoke on "Low Alloy Steel Castings From Available Raw Materials." He pointed out that certain alloying elements, which prior to the present emergency had been considered as standard, are now becoming limited and that the substitution of other elements was becoming necessary. He pointed to the increased use of copper and molybdenum as domestic alloys which could be used as substitutes. Of course, heat treatment procedure must be adjusted to take into consideration the difference of degree in the effect of the substituted elements from those given by the previously used alloys.

The afternoon speaker was E. K. Smith, Electro Metallurgical Co., Detroit, on "Foundry Control Methods in Making Uniform Cast Iron." Mr. Smith outlined some of the control methods now being used in the foundry to produce uniformly good castings, particularly by the cupola process. He covered such subjects as raw materials, cupola control equipment, cupola operation, use of chill tests, laboratory methods, ladle additions, structure control, physical tests, fluidity and impact tests, shrink control and mold conditions.

On Friday morning, May 23, two papers were presented. The first, by D. B. Reeder and L. N. Ludwig, Electro Metallurgical Co., New York, discussed various phases of steel castings production. The second, by E. L. Bartholomew, United Shoe Machinery Corp., Beverly, Mass., was entitled "The Heat Treatment of Cast Iron," and covered technique necessary for the austempering of cast iron and its resultant physical properties. Two papers also were presented at the afternoon session; the first by V. A. Crosby, Climax Molybdenum Co., Detroit, which covered new information on the effects of alloys in cast iron, and the second by C. W. Briggs, Steel Founders' Society of America, Cleveland, who discussed steel foundry molding sands.

Of interest to the non-ferrous foundrymen was a paper by A. W. Winston, Dow Chemical Co., Bay City, Mich., which covered magnesium foundry practice. In his paper, Mr. Winston gave a brief review of the development of magnesium foundry practice and made specific recommendations regarding core making, molding and melting methods. He discussed proper design for magnesium castings, the various magnesium alloys used and their various characteristics.

Additional convention personalities that were in attendance at the 45th Annual Convention.

(Photos courtesy Bradley Booth, Jackson Iron & Steel Co., Jackson, Ohio)

Birmingham Holds Clinic, Election and Celebration

By C. S. Whittet,* Birmingham, Ala.

A THREE-FOLD meeting climaxed a successful season for the Birmingham chapter, Friday, May 23, at the Thomas Jefferson Hotel.

The program for the evening was a "Soil Pipe Clinic." J. A. Bowers, American Cast Iron Pipe Co., acted as chairman of the program committee. The papers presented at the clinic were as follows: "Mixing Iron for Soil Pipe," by J. S. Landers, Central Foundry Co., Holt, Ala.; "Soil Pipe Molding Sand," by Herbert Pharr, read by Ernest Buck, McWane Cast Iron Pipe Co., Birmingham; "Gating of Soil Pipe," by L. B. Malloy, Anniston Foundry Co., Anniston, Ala.; and "Cleaning, Inspecting and Testing," by Sam Northington, Combustion Engineering Co., Chattanooga, Tenn. Each author gave the impression that he was master of his subject, both by the substance of his address and by the able manner in which he answered the many questions when the clinic came to the discussion stage.

The following men were elected to serve as Birmingham chapter officers for the 1941-42 year: *Chairman,* J. A. Bowers, American Cast Iron Pipe Co., Birmingham; *Vice Chairman,* J. E. Reynolds, U. S. Pipe & Foundry Co., Bessemer; *Secretary-Treasurer,* H. G. Mouat, Whiting Corp., Birmingham. Newly elected directors of the chapter were: Wayne Nelson, Young & Vann Supply Co., Birmingham; J. A. Woody, American Cast Iron Pipe Co., Birmingham; and W. O. McMahon, Sloss-Sheffield Steel & Iron Co., Birmingham.

As special guests at this meeting were some of the "old timers" of the district. The chairman, Mr. McMahon, presented each to the chapter with a statement of their number of years of foundry service. Those presented to the chapter were: Mike Hayes, 55 years; Billy Bowers, 53 years; George Williamson, 50 years; Jack Moore, 46 years; Louis Smith, 44 years; and Billy Oberhelman, 41 years.

*National Cast Iron Pipe Co., and reporter, Birmingham District Chapter.

N. I.-S. W. Concludes Years Activities

By J. R. Cochran,* Rockford, Ill.

W. A. HAMBLEY, Allis-Chalmers Mfg. Co., Milwaukee, Wis., helped to end the year's activity of the Northern Illinois-Southern Wisconsin chapter at their May 20 meeting, held in the Hotel Hilton, Beloit, Wis. Mr. Hambley gave a very interesting talk on the work of the analysis of casting defects committee, of which he is chairman. He aroused a great deal of interest in the report and instigated a worthwhile discussion on one of the most important subjects to the foundryman.

Saturday, June 7, found as many foundrymen and friends as possible crowding into Svithoid Park, Rockford, Ill., for the annual stag picnic and outing. The men ate lunch and dinner there and worked off the pep and vigor accumulated since last year's outing by playing golf, softball and quoits. For those less active persons, talkfests and open forums or foundry problems was in order.

Andy Wiegert and Bill Goff (right) exchange greetings at the Northern Illinois-Southern Wisconsin outing.

(Photo courtesy Bert Nystrom, J. I. Case Co.)

*Sundstrand Machine Tool Co., Foundry Div., Rockford; and Technical Secretary, Northern Illinois-Southern Wisconsin Chapter.

Goldie Speaks at Final Pittsburgh Meeting

By R. L. Hartford,* Pittsburgh, Pa.

FINAL technical meeting of the year was held at Clifford B. Connelly Trade School, where members inspected the foundry and watched pouring of a melt. Dinner was served in the school's restaurant, where the workings of the foundry course were explained by W. H. Norsey, foundry instructor.

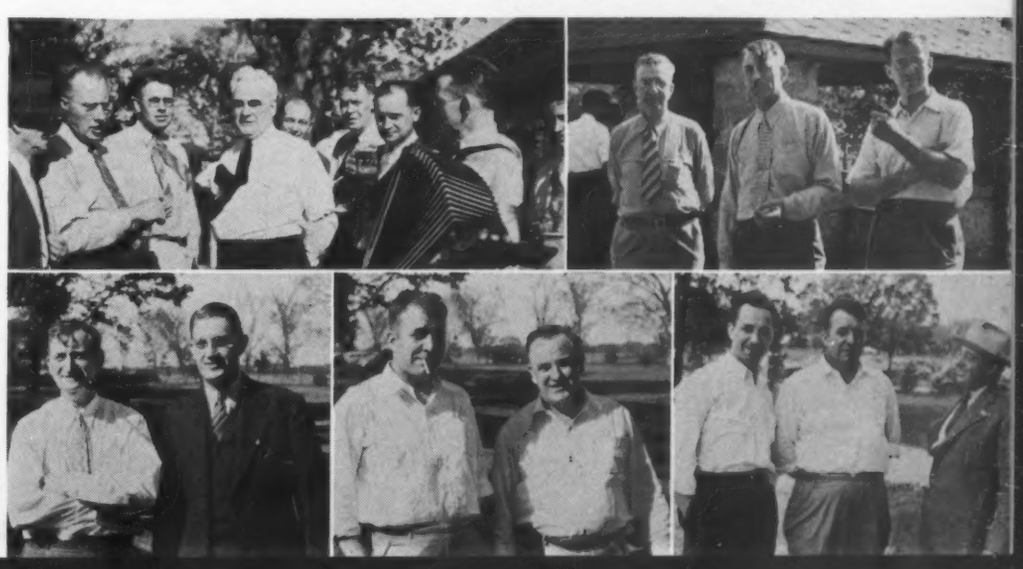
Apprentice training was the subject under discussion, with James G. Goldie, Cleveland Trade School, Cleveland, the principal speaker. Mr. Goldie, chairman, American Foundrymen's Association Apprentice Training Committee, outlined the work which has been done in Cleveland to establish a definite apprentice training program. The speaker outlined methods of obtaining equipment, interesting boys in the work, and locating jobs for them.

New officers were unanimously approved and elected as follows:

*Penton Publishing Co., and Chairman, Program committee, Pittsburgh Foundrymen's Association.

The Northern Illinois-Southern Wisconsin Chapter had a break in the weather and a good crowd at their annual outing held June 7 at Svithoid Park, Rockford.

(Photos courtesy John Bing, A. P. Green Fire Brick Co.)



President, C. J. Scheckhaus, Union Spring & Mfg. Co.; *Vice President,* W. H. Satterfield, Pittsburgh Steel Foundry Co.; *Secretary-Treasurer,* C. H. Paul, Mackintosh-Hemphill Co.

On June 9, the year's activities were wound up with the annual outing held at Chartiers Heights country club. Nearly 400 members and guests turned out, with the weather perfect for the first time in years. W. H. Scott, Pittsburgh Coke & Iron Co., was chairman and did an excellent job in providing golf, horse-shoe pitching and mush-ball for the athletically inclined and plenty of indoor sport for those who were not. Prizes were awarded to golfers and non-golfers.

Meeting the last time for the year, the Northern Illinois-Southern Wisconsin Chapter had for their speaker William Hambley, (Top center), Allis-Chalmers Mfg. Co., and Chairman, A.F.A. Gray Iron Casting Defects Committee. Sitting on the left of Mr. Hambley is C. V. Nass, Fairbanks Morse Co., and on the right is P. A. Paulson, Gunite Foundries Corp. (Center—left to right) Messrs. Nielsen, Mattison, Minert, Klopf, Cochran and Paulson. (Bottom) The "seventh inning" stretch.
(Photos courtesy John Bing, A. P. Green Fire Brick Co.)

Philadelphia Closes Year With Annual Outing

By J. T. Fegley,* Philadelphia, Pa.

PHILADELPHIA foundrymen and their friends, on Wednesday, June 11th, took time off to attend the annual outing which was held at Hi-Top Country Club, Drexel Hill, Pa. While some basked in the sunshine, others played golf, quoits and baseball.

The team representing the foundrymen outhit the supply men and won by the score of 15-8. Jimmy Hatton, who pitched for the losers, got into difficulty in the third inning and was relieved by "Big Ben" Belden, who checked the hard-hitting foundrymen. Jack Robb proved a very efficient umpire and called them as he pleased.

Dinner was served in the early evening and over two hundred and fifty were present. It was a delightful meal and there were door prizes galore. The floor show that followed consisted of novelty, singing and dancing acts.

All had a grand time and Jack Robb, Hickman, Williams & Co., was re-elected chairman, entertainment committee. His committee deserves much credit for the manner in which the outing was handled.

*North Bros. Mfg. Co., and Chairman, Publicity committee.

Toledo Foundrymen Hold Second Meeting

FOR the second time this year, a committee of A.F.A. members in the Toledo area organized and held a well attended and interesting meeting for the foundrymen of their district. The meeting was held April 25 at the Hillcrest Hotel, Toledo, with some 70 present for the get-acquainted dinner.

The local committee arranging the meeting was under the chairmanship of Ralph L. Binney, president, Binney Castings Co., assisted by R. A. Clark, Toledo Machine & Tool Div., E. W. Bliss Co.; L. M. Long, Bunting

Brass & Bronze Co.; E. C. Mathis, Pickands Mather & Co., and V. E. Zang, Unitcast Corp.

Following the dinner, L. P. Robinson, director of core oil sales, Werner G. Smith Co., Cleveland, and a director of the A.F.A., gave his most instructive talk on "Practical Core Room Problems." In his presentation he went into detail, listing some nine variables in core practice which need constant checking and supervision. That the presentation was most thoroughly appreciated was evidenced by the extensive questions advanced.

The success of these two meetings has been such that the local committee wishes to continue them in the fall, looking toward the organization of an A.F.A. chapter.

Minnesota Group Forms Twenty-First Chapter

By O. W. Potter,* Minneapolis, Minn.

RECENTLY, when the members of the Twin City Foundrymen's Association voted unanimously to petition the A.F.A. Board of Directors for a chapter organization, this authorization was granted as some thirty-five firms and individuals signed the petition. The Association then announced an organization meeting for May 26 at Minneapolis, which time was to coincide with the annual meeting of the Twin City Foundrymen's Association. With 116 foundrymen present, the meeting was held at the plant of the Western Alloyed Steel Castings Co., Minneapolis, the group being the guests of the company at a dinner served in the basement of their new office building.

Following the dinner, the meeting was called to order by the president of the local Association, Fred Kaim, Union Brass & Metal Mfg. Co., St. Paul. Considerable time was taken during the roll call to introduce guests and representatives of the various firms. Following this, S. V. Wood, president, Minneapolis Electric Steel Castings Co., Minneapolis, and senior member of the executive committee of the local Association, gave a brief talk of reminiscence on the foundry business in this district and the history of the local Association which was organized in 1899, one of the oldest of the local foundrymen's associations.

After the transaction of routine business, the chairman called for the election of officers to serve for one year for the new A.F.A. chapter. The following officers and directors were elected:

Chairman—E. C. Madson, Anderson Foundry Co., Bayport, Minn.

Vice Chairman—R. M. Aker, Western Alloyed Steel Castings Co., Minneapolis.

Secretary-Treasurer — O. W. Potter, University of Minnesota, Minneapolis.

Directors—S. V. Wood, Minneapolis Electric Steel Castings Co., Minneapolis.

Fred Christensen, R. R. Howell & Co., Minneapolis.

Jack Bryant, Northern Pump Co., Minneapolis.

E. H. Ryan, St. Paul Brass Foundry Co., St. Paul.

Stuart Cameron, Valley Iron Works, St. Paul.

Fred Kaim, Union Brass & Metal Mfg. Co., St. Paul.

R. E. Kennedy, secretary of A.F.A., was then introduced and talked on chapter organization and operation. He mentioned particularly the fact that this chapter would have affiliated with it the first student chapter of the Association organized in the country, that of the University of Minnesota Student chapter.

Fulton Holtby, assistant pro-

From the newly affiliated Twin City Chapter comes these pictures illustrating the turnout for their organization meeting. (Top—left to right) Messrs. R. E. Kennedy, Secretary, American Foundrymen's Association; A. W. Gregg, guest speaker, Whiting Corp.; R. M. Aker, Vice-Chairman, Western Alloyed Steel Castings Co.; O. W. Potter, Secretary-Treasurer, University of Minnesota; and Fred Kaim, Chapter Director, Union Brass & Metal Mfg. Co. (Bottom) The dinner group at Western Alloyed Steel Castings Co.

*Secretary-Treasurer, Twin City Chapter.

fessor, University of Minnesota, made a brief report on his attendance at the chapter officers' dinner held at the national convention in New York City.

The meeting then adjourned to the plant of the Western Alloyed Steel Castings Company for an inspection trip and to watch the pouring of a steel heat from the electric furnace.

Wisconsin Chapter Closes Season With Awards Dinner

THE Wisconsin chapter closed its highly successful 1940-41 season with an Awards dinner at the Hotel Schroeder, Milwaukee, on May 23. Chapter President B. D. Claffey, General Malleable Corp., Waukesha, presided. Following the dinner, Chairman Claffey reported to the membership the accomplishments of the chapter during his administration.

He then called on E. O. Jones, A.F.A. director, Safety and Hygiene section, secretary, National Membership Committee, who presented to the chapter the Membership Bell as winner of the national membership contest. Mr. Jones congratulated the chapter and particularly thanked W. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee, chairman of the chapter's membership committee, and Chapter President Claffey, co-chairman of the National committee, for their loyal support.

The president then called on Dave Zuege, Sivyer Steel Casting Co., Milwaukee, chairman of the Student Aid Committee, who reported on the success of the loan funds established at the University of Wisconsin, Madison, and Marquette University, Milwaukee. The report showed that the funds were being used in both institutions as they were intended and that this project was a very worthwhile one. Mr. Zuege also reported on the results of the essay contests sponsored at the above mentioned universities as follows:

Marquette University

First—Frank Brendler on *"Importance of Cost Determination in Modern Jobbing Foundries."*

Second—Tom E. Armstrong on *"A Discussion on the Substitution of Copper for Nickel in Making Alloy Cast Irons."*

University of Wisconsin

First—Chas. S. DuMont on *"The How and Why of Foundry Practice."*

Second—Tie between Chas. MacNeill on *"Impressions of a Foundry Novice"* and Chas. W. Phillips on *"Melting Practice at the Vilter Mfg. Company Foundry.*

Following the report, the first place winners were presented with $15.00 and the second placers with $10.00 cash prizes. In the tie, the second place prize was divided equally between the two contestants.

Next report was on the results of the local apprentice contests in gray iron, steel and nonferrous molding and patternmaking and the chapter's entries in the National Apprentice Contest held during the recent New York Convention, by W. E. Watson, Allis-Chalmers Mfg. Co., West Allis. In addition to presenting checks and certificates to Tony Ivancich, Standard Brass Works, and Kenneth Zinda, Allis-Chalmers Mfg. Co., first and third place winners, respectively, in non-ferrous molding in the national contest, and to H. Novak, Maynard Electric Steel Casting Co., second place winner in the steel molding contest, Mr. Watson presented cash awards to first, second and third place winners in the local contests sponsored by the chapter.

The high spot of the evening was the presentation of service plaques to a group of "old timers" who have spent their lives in the service of the foundry industry. In presenting the plaques, Chapter President Claffey said in part:

Pictures taken at the "Awards Dinner" which constituted the final meeting of the Wisconsin Chapter for 1940-41. (Top left) Some of the "old timers" present at the dinner. (Back row standing left to right) Messrs. Harrison, Anderson, Ziebell and Tietgen. (Sitting left to right) McLain, Borgnis and Glasscot. (Top right) Past President Bill MacNeill presenting chapter ring to Retiring President Ben Claffey. (Bottom left) Al Harrison (left) and Tom Glasscot caught together. (Bottom right) Five past presidents of the Wisconsin Chapter (left to right) Messrs. Bornfleth, Gerlinger, Jacobs, MacNeill and Claffey.

(Photos courtesy John Bing, A. P. Green Fire Brick Co.)

". . . We have another group of gentlemen who have long been identified with the foundry industry and whom we wish to honor tonight. In an industrial nation, such as ours, there is no more significant group of men than the pioneers of an industry. In their hands and minds were molded the policies, practices and arts which have made the prosperity, contentment and happiness of this nation possible.

"Tonight, we wish to honor this small pioneer group; devoted members of our industry, and to pay tribute to these men who have given unstintingly of their thought, time and effort to promote and advance the industry which we represent. Industry, despite its mechanization and material structure, is made of human lives and emotions, and those who grow with it must be a part of it.

"Gentlemen, you have always definitely been a part of the foundry industry. You have accomplished much and we are proud of you. You have served long and well and, as we recognize the accomplishments of these younger men tonight and turn over to them the emblem of the foundry industry which you have carried so proudly, we do so reluctantly—but with a feeling of pride in what you have done for us . . .

"So, on behalf of the Wisconsin chapter of A.F.A., it is my pleasure, as well as a privilege and an honor, to present to you gentlemen, in recognition of your services to the industry, the Wisconsin chapter of A.F.A. bronze plaque of 1941. This is the first time these awards have been made and I hope, in the time to come, they will warm your hearts in the thought of the many friends you have in this industry."

Following the presentation, Chapter President Claffey turned over the gavel to the newly-elected chapter president, A. C. Ziebell, Universal Foundry Co., Oshkosh, whose first act was to call on W. J. MacNeill, Federal Malleable Corp., Milwaukee, to present to Retiring President Claffey the past president's A.F.A. ring. It was announced at the meeting that the annual golf tournament and dinner of the chapter would be held Friday, July 18, at the Ozaukee Country Club, Milwaukee.

Plaque presented to "old timers" by the Wisconsin chapter.
(Photo courtesy John Bing, A. P. Green Fire Brick Co.)

New England Has Four Speakers at Closing Meeting

By M. A. Hosmer*, Boston, Mass.

RAYMOND MEADER, chairman, program committee, New England Foundrymen's Association, arranged a very attractive series of speakers for the last regular meeting of the season which was held at the Engineers Club, Boston, on June 11.

In spite of the lateness of the season, one hundred sat down to a lobster supper served previous to the meeting. Also preceding the speakers, C. O. Butler, president of the Association, reported briefly on the results of a meeting held in Washington in regard to price stabilization of foundry scrap and its effect on New England. Mr. Butler was one of the representatives from New England at that meeting.

Mr. Butler, after announcing that there would be four speakers of the evening and that each one would be allowed ten minutes for presentation and ten minutes for discussion, introduced as the first speaker P. B. Richardson, district sales manager, Harbison-Walker Refractories Co., who spoke on "Refractories."

In the short time allotted, Mr. Richardson covered this broad subject very well, dividing refractories into acid, basic and neutral types. The advantages of silica, magnesia, and chrome brick were explained and the processes of manufacture briefly outlined. He said that in general silica brick were composed of 96 per cent SiO_2 and had a fusion point of 3100°F.; that magnesia brick were heavy, expensive and had quite a large expansion under heat; the fusion point being about 3000-3300°F.; that chrome or neutral brick contained about 40 per cent chromium oxide, had an equally high fusion point, and a thermal expansion of ¼ in. per ft., and that ordinary fire clay brick contain 50 per cent silica.

F. R. Elliot, superintendent of foundry operations, Westinghouse & Electric Mfg. Co., Springfield, next discussed "Gates and Risers." He said that a gate should be designed so that it will introduce clean metal into the mold at a uniform rate.

A riser is usually placed over a heavy section and not separated from the gate by such a thin section that it would not be able to be filled with hot metal while pouring. Considerable thought is now being given to pouring thin risers with the advantages of:

1. Eliminating porosity.
2. Requiring less metal.
3. Enables the use of lower pouring temperatures.
4. Enables the use of smaller risers.

*Chemist, Hunt-Spiller Mfg. Co.

He elaborated on this by describing in detail a large gear casting which he has poured successfully by this method, using a riser over the hub.

Warren V. B. Baker, metallurgist, Standard Foundry Co., Worcester, was called upon then to describe a study which he had been making of cupola slags. Mr. Baker said that through an examination of many slag samples, he had learned to make use of the color and viscosity of cupola slags and their effect on the temperature of the metal, iron oxide content of the slag, control of total carbon, and wear and tear on the lining. He also mentioned the value of various fluxes and said that dolomite was useful in giving a certain amount of fluidity to the slag.

Robert Loss, turbo-blower department, Ingersoll-Rand Co., next spoke on "Control of Air in the Cupola." He explained that control of air weight would be of no use unless a proper sized blower is used. The weight of air going into the cupola is dependent on:

1. Atmospheric pressure.
2. Atmospheric temperature.
3. Condition of charge.
4. Type of blower-centrifugal or positive.
5. Amount of charge.

Air weight control enables a foundry to:

1. Keep air at a definite weight.
2. Repeat this setting from day to day.
3. Vary this setting at will.
4. Get same amount of air as control can be depended upon once correct setting is made.

He called attention to the fact that leaks, such as slag holes and peep holes, vitally affect the constancy in the amount of air delivered.

Wisconsin Chapter Furthers Cooperation With Engineering Schools

THE Wisconsin chapter has done much to focus the attention of engineering schools in the state on the importance of the foundry industry. In addition to establishing student loan funds at two of Wisconsin's outstanding engineering institutions of learning, it has sponsored essay contests on foundry subjects in these same schools.

That this co-operation between the Wisconsin chapter and the universities is bearing fruit, the letter shown in the accompanying box is ample evidence.

UNIVERSITY OF WISCONSIN
MADISON

College of Engineering
Office of Dean

May 22, 1941

Mr. B. D. Claffey,
General Malleable Corporation,
Waukesha, Wisconsin.
Dear Mr. Claffey:

As the occasion now arrives when your Association is to award prizes to our students for the winning essays on foundry practice, I wish to express for our College of Engineering and myself our very sincere appreciation of this further co-operation on the part of the American Foundrymen's Association.

We are particularly pleased that the offering of these awards has been successful in stimulating the production of papers of as high quality as we understand these student papers to be. The stimulation of such interest cannot help but repay not only the efforts of the young men concerned, but all of us who are so much interested in advancing this important field of industry.

Sincerely yours,

F. ELLIS JOHNSON,
Dean.

Johnson of Caterpillar Speaks at Muskegon

ON May 5, the recently organized Western Michigan Chapter held a meeting at Muskegon. With 70 members and guests present for the dinner at the Occidental Hotel, Muskegon, the members elected as *Chairman,* Don F. Seyferth, works manager, West Michigan Steel Foundry Co., Muskegon; as *Vice Chairman,* C. J. Lonnee, plant supt., Muskegon Piston Ring Co., Sparta, Mich., and as *Secretary-Treasurer,* Max Amos, Standard Automotive Parts Co., Muskegon.

Directors elected at the previous meeting were—

A. E. Jacobson, Grand Haven Brass Foundry, Grand Haven

J. W. Livingston, Blackmer Pump Co., Inc., Grand Rapids

C. P. Ziegler, Grand Rapids Foundry, Grand Rapids

E. W. Beach, Campbell Wyant & Cannon Foundry Co., Muskegon

F. J. Buckley, Kalamazoo Foundry & Machine Co., Kalamazoo

E. G. Carter, Standard Automotive Parts Co., Muskegon

O. G. Jentsch, Wolverine Brass Works, Grand Rapids

C. M. Clover, Clover Foundry Co., Muskegon

R. J. Teetor, Cadillac Malleable Iron Co., Cadillac

G. W. Cannon, Jr., National Motor Casting Div., Campbell Wyant & Cannon Foundry Co., South Haven

J. C. Jensen, Battle Creek Foundry Co., Battle Creek

M. D. Johnson, chief inspector, Caterpillar Tractor Co., Peoria, Ill., was the speaker of the evening and gave one of the most instructive addresses ever presented before an A.F.A. chapter meeting. In his talk, he discussed the relations between the inspection department of a plant using castings and the foundries supplying castings. He showed how this cooperation can be of immense benefit to both organizations in improving methods and quality and providing economies.

Abstracts

NOTE: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Aluminum Alloys

See Non-Ferrous, Aluminum Pistons.

Apprentice Training

DEFENSE PERSONNEL. *"National Defense Training Program,"* by J. G. Goldie, *The Foundry*, vol. 69, no. 3, March, 1941, pp. 46-47, 124-127. Last year, the Cleveland Board of Education established a national defense training course which included an extensive program designed to provide a supply of semi-skilled workers for foundries in the district. This course is designed to cover a training period of 300 hours. The course has been developed to give the trainee the most practical and intensive training possible on jobs of commercial standards in iron, steel and non-ferrous metals. The theory is limited to those items which are absolutely essential to a functional understanding of the practical work under consideration. The entire course has been designed to prepare the trainee for some job in the foundry in a relatively short period. (Tr.)

Centrifugal Casting

PROCESSES. *"Centrifugal Casting with Axis Vertical,"* by Nathan Janco, *Metal Progress*, vol. 39, no. 4, April, 1941, pp. 432-434. Until recently, the use of centrifugal casting machines with axis vertical has been neglected. This neglect has been unwarranted, as the field of application for vertical centrifugal casting is much broader than that for horizontal casting. The author answers the question why pour castings in a machine when they may be successfully cast statically, by saying you obtain better quality castings, you can produce castings more economically and to cast a part which cannot be satisfactorily cast statically. The three methods of "centrifugal castings" are described: (1) The true centrifugal casting which is spun about on its own axis has no central core, and in which the cooling takes place from the periphery toward the axis; (2) the semi-centrifugal casting which is spun about its own axis but does have a centrally located core; in this variety solidification proceeds from the central axis toward the periphery as well as from the periphery toward the axis, and (3) is the method of pressure casting in which the castings are arranged symmetrically about the center of rotation; normal type of cooling takes place in these as in a static casting. (Ca.)

See also *Cast Iron.*

Cast Iron

ACID RESISTING. *"Acid-Resisting Cast Iron," Foundry Trade Journal*, vol 64, no. 1278, February 13, 1941, pp. 107-110. This is a review of English chemical cast iron practice in making cast iron vessels for the concentration of sulphuric acid. The casting process as done by iron founders in St. Helens and Widnes area of Lancashire is outlined. A section devoted to high-silicon irons and the influence on composition on the phosphorous is given. (C.I.)

CENTRIFUGAL CASTING. *"Producing Cast Iron Pipe Centrifugally,"* by Don Graf and Edwin F. Cone, *Metals and Alloys*, vol. 13, no. 2, February, 1941, pp. 155-161. This is a pictorial article showing the various steps in this most interesting industrial process. These pictures were taken at the plant of the United States Pipe and Foundry Co., Burlington, N. J. —a company which has done much to "iron out the bugs" of this process. In these centrifugal machines, when running to capacity, pipe can be turned out on the average of 10 to 30 lengths per hour, depending on the size. (Ca.)

ENAMELING. *"Formation of Blisters, Pinholes and Black Specks on Vitreous-Enameled Cast Iron,"* by A. L. Norbury, *Foundry Trade Journal*, vol. 64, no. 1281, March 6, 1941, pp. 161-162, 164. In a diagrammatic manner the stages in formation of blisters, pinholes and black specks are shown. Sources of gas bubbles, bubbles due to entrapped gases escaping, bubbles due to reaction between enamel and graphite, bubbles due to relation between enamel and combined carbon, bubbles due to reaction between oxidized metal and carbon in the metal and effect of composition on enamel are a few of the topics covered in this paper. (C.I.)

FLAME HARDENING. *"Flame Hardening Cast Iron Bearing Rings,"* by James L. Foster, *Metal Progress*, vol. 39, no. 4, April, 1941, pp. 438-439. The author's company uses 25 per cent molybdenum in their basic analysis for making bearing rings. For their hardening fixture they use a flame hardening torch in the place of the cutting torch, and the heating flame (oxy-acetylene) is followed by a pipe carrying water for quenching, ¼-in. behind. The cast iron ring to be hardened is placed horizontally on a centered fixture below the table top, and a simply arranged canvas apron collects the splash of quenching water to be drained away from a pan below. (C.I.)

HYDROGEN EFFECT. *"The Significance of Hydrogen in the Metallurgy of Malleable Cast Iron,"* by H. A. Schwartz, G. M. Guiler and M. K. Barnett, *Foundry Trade Journal*, vol. 64, no. 1281, March 6, 1941, pp. 159-160. This investigation may be regarded as extensive rather than intensive. This, the last section of the article, gives conclusions that have been drawn by the authors concerning their determinations. These conclusions apply to hydrogen as determined by direct combustion and more specifically to metal melted by the cupola-coal-fired-air-furnace duplex process. It takes in white cast irons of such composition as are commonly encountered in malleable practice since these investigations have not been extended beyond that range. This section of the paper explains that hydrogen from any source very greatly retards the graphitizing rate, hydrogen does not seem to affect the "nodule number" of the resulting malleable cast iron, but does seem to affect the migratory rate of carbon in solid solution at least in gamma iron and white iron high in hydrogen content as the result of melting practice produces iron of lower mechanical properties than iron lower in that element. (C.I.)

METALLOGRAPHY. *"Metallography of Inclusions in Cast Irons and Pig Irons,"* by H. Morrogh, *Foundry Trade Journal*, vol. 64, no. 1274, January 16, 1941, pp. 37-39. There has been considerable discussion on the effect of inclusions in cast iron, and theories have been put forward implying that these inclusions exert effects on the structural characteristics of this alloy. However, little has been done to define the meaning of "inclusions." This paper tends to show how misleading this name is. With regard to theories on the effect of inclusions in cast iron and pig-iron, by far the most important are those which postulate their effect on the size and type of graphite formation. The author has devised a preliminary scheme of classification for inclusions in cast irons and pig-irons from the points of view of their color, morphology and chemical constitution. Each of the groups is to be discussed in detail and this section begins with the number one group—manganese sulphide, iron sulphide and composite inclusions of these two. (C.I.)

METALLOGRAPHY. *"Metallography of Inclusions in Cast Irons and Pig-Irons,"* by H. Morrogh, *Foundry Trade Journal*, vol. 64, no. 1275, January 23, 1941, pp. 55-58. In discussing manganese sulphide the author tends to show what influence pouring temperature has when cast iron is poured at a high and low temperature. The inclusions found in malleable iron and in manganese sulphide are presented. Further investigation presents data concerning crystal structure of iron sulphide and sulphide nodules in malleable cast iron. (C.I.)

METALLOGRAPHY. *"Metallography of Inclusions in Cast Irons and Pig-Irons,"* by H. Morrogh, *Foundry Trade Journal*, vol. 64, no. 1277, February 6, 1941, pp. 89-90. In these samples it was possible to observe the effect of pouring temperature on the morphology of the titanium sulphide crystals. The sample poured at the highest temperature had typically lamellar idiomorphic crystals and the cold-poured sample had much smaller and very compact crystals. There were many more crystals of the sulphide in the cold-poured sample than in the hot-poured one. To determine this more definitely, the samples were examined at a magnification of 1,500, the image being projected on to a ground-glass screen and the number of inclusions per unit field were counted as the specimen

was slowly moved under the objective. Two hundred unit fields were counted and the average numbers of inclusions per unit field were calculated for both the hot and the cold-poured sample, giving a value of 0.074 for the former and 0.470 for the latter. (C.I.)

SILICON. *"Increasing Silicon with Silvery Iron,"* by Bradley H. Booth, *The Foundry,* vol. 69, no. 3, March, 1941, pp. 40-41, 110, 112. The percentage of contained silicon is the basic distinguishing feature between silvery and all other grades of pig iron, although there are certain fundamental differences in furnace practice which make silvery irons more closely related to charcoal pig iron than to coke-smelted pig irons. Silvery pig is an important source of silicon for cupola charges containing low silicon pig, much gray iron scrap, or steel. Common practice is to use from 3 to 20 per cent of silvery iron in mixes which have high percentages of scrap and steel. Such mixes are economical and lend themselves readily to the production of quality iron of high strength, close grain structure, and superior machinability for a given hardness. Cast irons with tensile strengths of from 30,000 to 50,000 lb. per sq. in., depending on analysis and the amount of steel used in the mix, now are being made successfully from such charges. Three typical mixes used in gray iron foundries are given and discussed in detail.

WELDING. *"Cast Iron for Welding Gray Cast Iron,"* by Gilbert S. Schaller, *Foundry Trade Journal,* vol. 64, no. 1281, March 6, 1941, pp. 157-158. The author discusses the development and limitations of cast iron and gives information on the reclamation of castings through welding. Discussions of the welding of cast iron usually contain some reference to machinability as frequently the deposited metal must be machined following the welding operation, and, according to the author, passing judgment on the soundness of a weld from the standpoint of machinability alone is open to broad interpretation and somewhat questionable. A discussion of the metallic arc process also is presented. (C.I.)

Castings

MACHINE TOOL. *"Machine Tool Castings," Mechanical Engineering,* vol. 63, no. 3, March, 1941, pp. 226-229. Comments by P. S. Lane, research engineer, Muskegon Piston Ring Co., Muskegon, Mich.; A. C. Denison, president, Fulton Foundry & Machine Co., Inc., Cleveland, O.; R. Schneidewind, professor, mechanical engineering, University of Michigan, Ann Arbor, Mich., and J. S. Vanick, metallurgist, International Nickel Co., Inc., New York, give pertinent data and information concerning the paper *"Making Better Machine-Tool Castings,"* by F. J. Dost, *Mechanical Engineering,* May, 1940, pp. 365-369. (Ca.)

Committee Report

INGOT HETEROGENEITY. *"Third Report of the Oxygen Sub-Committee," Foundry Trade Journal,* vol. 64, no. 1289, May 1, 1941, p. 293. This sub-committee forms part of the committee on the Heterogeneity of Steel Ingots, which in turn is a Joint Committee of the Iron and Steel Institute and the British Iron and Steel Federation. The report is of particular significance to gray iron metallurgists, for, simultaneously, the analytical methods as developed for steel being studied as to any modifications requisite for application to pig and cast-iron. Each section of the report is briefly but thoroughly discussed and the important points are outlined. (Te.)

Cores

GAS. *"Reducing the Amount of Core Gas,"* by Harry W. Dietert, *The Foundry,* vol. 69, no. 3, March, 1941, pp. 43, 119. Foundrymen desire a reduction of the amount and the rate of liberation of gas driven from cores during and after pouring of a casting. Gas may be held to a minimum in several ways, this includes fineness of the sand, coarseness of the sand, quantity of binder, baking the core at a high temperature and the rate at which the gas in a core is liberated. Each of these gas controllers is discussed in detail by the author. (Co.)

Enameling

See *Cast Iron, Enameling.*

Flame Hardening

See *Cast Iron, Flame Hardening.*

Furnace

ELECTRIC ARC TYPE. *"The Application of Electric Arc Type Furnaces to Metal Melting,"* by George P. Tinker, *Proceedings, Institute of Australian Foundrymen,* vol. 1, 1940, pp. 1-14. The author describes the construction and principles of operation of the electric arc; its application in steel, high duty irons, malleable iron and non-ferrous melting practice; and compares the cost between electric and other methods of melting. (F.)

Gating

See *Non-Ferrous, Gating.*

Heat Treatment

See *Cast Iron, Flame Hardening.*

Magnesium Alloys

See *Non-Ferrous, Magnesium.*

Metallography

See *Cast Iron, Metallography.*

Non-Ferrous

ALUMINUM PISTONS. *"Unsoundness in Gravity Die-Cast Silicon-Aluminum Alloy Pistons,"* by R. T. Parker, *Foundry Trade Journal,* vol. 64, no. 1288, April 24, 1941, pp. 277-279. The original problem which was attacked was the occasional appearance of fine unsoundness in machined pistons. The explanation of the type of unsoundness that has been encountered is thought to be gas contamination to a variable degree. It also has been shown that variations in machining technique complicated the problem, since when the unsoundness was fine, the small cavities might be covered by flowing of the surface. The investigation has shown, however, that examination of microsections is by no means sufficient when attacking problems of unsoundness such as the one outlined. (A1.)

BRONZE GEAR PRODUCTION. *"The Production of Bronze Gear Blanks,"* by E. Longden, *The Metal Industry* (London), vol. 48, no. 2, January 10, 1941, pp. 26-28. This is the first of a series of articles dealing with the practical aspects of molding, gating, and feeding of representative phosphor-bronze alloys. The author suggests methods by which the difficulties associated with the founding of these alloys may be overcome. (N.F.)

GATING. *"Gating Non-Ferrous Castings Is Important,"* by N. K. B. Patch, *The Foundry,* vol. 69, no. 3, March, 1941, pp. 38-39, 117-118. What should influence the choice of gates when two alternatives are suggested? What **should** determine whether a multiple series of gates is preferable to a single gate? What size and where should the sprue be located so that all gates will have a uniform supply of metal? These are some of the questions that the author answers in this article on non-ferrous gating. (N.F.)

MAGNESIUM ALLOYS. *"The Constitution of the Magnesium-Rich Alloys in the Systems Magnesium-Lead, Magnesium-Tin, Magnesium-Germanium and Magnesium-Silicon,"* by Geoffrey V. Raynor, *The Journal of the Institute of Metals* (London), vol. 66, 1940, pp. 403-426. The results of this work has been discussed in the light of general principles deduced from previous systematic studies of magnesium alloys, with special reference to the effect of a stable binary compound on the form of the equilibrium diagram. The equilibrium diagrams for the magnesium-rich alloys, magnesium with lead, tin, germanium, and silicon have been investigated. The liquidus curves for the alpha solid solutions were determined in all four systems, and the alpha solid-solubility and solidus curves were examined in detail for the alloys with lead and tin. X-ray experiments were carried out to estimate the slight solubilities of germanium and silicon in magnesium. The solubility of lead in solid magnesium was found to extend to much higher concentrations of lead at high temperatures, and lower concentrations at low temperatures, than was previously supposed, while the values of Grube and Vosskuhler for the solubility of tin were substantially confirmed. The solubilities of germanium and silicon in magnesium were found to be very slight. The liquidus curves for the four systems form a clear valency group, with minor differences between them which may be accounted for on general theoretical principles. (A1.)

MAGNESIUM CASTINGS. *"Magnesium Castings,"* by M. E. Brooks and A. W. Winston, *The Foundry,* vol. 69, no. 3, March, 1941, pp. 34-37, 122-123. Sand foundry practice for magnesium alloys is similar in general principles to that used for other metals. However, there are numerous points of difference. The first of these characteristics requires that oxidation inhibiting agents be present in the sand and that special fluxes be used in the melting operation. Special methods of gating, venting and risering castings have been developed to offset the problems due to the high shrinkage and to the light weight of the molten metal. The procedures described in this discussion may be considered to present American practice fairly completely. (N.F.)

MELTING. *"Non-Ferrous Melting Practice,"* by R. A. Cheers, *Proceedings, Institute of Australian Foundrymen,* vol. 1, 1940, pp. 47-62. Discusses furnace design and construction; operation of coke and oil fired furnaces and electric furnaces; stresses effect of composition of fuels on subsequent casting; names six points for the care of crucibles; describes effect of various gases on the metal; and explains use of various fluxes and deoxidizers. (N.F.)

PERMANENT MOLDS. *"Permanent Molds and Their Application to the Production of Non-Ferrous Castings,"* by Frank Hudson, *Foundry Trade Journal,* vol. 64, no. 1281, March 6, 1941, pp. 153-155, 158. Surprisingly little work has been done relative to the production of castings in refractory or refractory-lined molds, or in the use of the more common copper-base, non-ferrous alloys, so widely employed in

the average brass foundry. A useful purpose may be served by examining the latter problem in detail and this is the aim of this paper. In the manufacture of castings from permanent molds are two broad factors which must be taken into account, first, to the effect of the mold upon the metal and, secondly, the effect of the metal on the mold. The author discusses his subject as to the effect of the mold upon the metal, center porosity, design of mold, mold dressings and type of castings suitable for production in permanent molds. Tables are presented giving the effect of mold upon mechanical properties of some cast non-ferrous alloys, liquid and solid contraction of some non-ferrous alloys and composition employed for cast iron permanent molds. (N.F.)

Permanent Molds

See *Non-Ferrous, Permanent Molds and Aluminum Pistons.*

Photomicrography

POLISHING. *"Electrolytic Polishing of Steel Specimens,"* by G. F. Meyer, G. D. Rahrer and J. R. Vilella, *Metals and Alloys,* vol. 13, no. 4, April, 1941, pp. 425-430. Polishing steel specimens for microscopic examination is always a difficult as well as painstaking task—the polishing must be of a high order to assure efficient examination. The mechanical method is the one most generally used. But the authors of this paper not only describe an electrolytic method and how to use it, but also state that specimens of low carbon or low alloy steels can be polished electrolytically with a degree of perfection comparable to that obtainable by competent mechanical polishing. They also assert that ferritic austenitic stainless alloys can be polished electrolytically with a degree of perfection difficult to attain mechanically. (Te.)

Pig Iron

CLASSIFICATION. *"Pig Iron Classification to Improve Service and Expedite Deliveries," Steel,* vol. 108, no. 18, May 5, 1941, p. 46. A new classification of pig iron by grades has been formulated by the General Technical Committee of the American Iron and Steel Institute and published in a manual entitled *"Standard Pig Iron Compositions of the American Iron and Steel Industry and Their Grades, Chemical Composition and Common Uses."* The new list of standard compositions contains grades "of proven merit and in extensive use for a wide variety of purposes." The list contains 257 compositions. Included are 26 low-phosphorous, 24 intermediate low-phosphorous, 8 bessemer, 47 malleable, 6 basic, 42 Northern high-phosphorous foundry, 42 Northern low-phosphorous foundry, 14 Southern foundry and 48 silvery pig iron analyses. This new standard list, it is expected, will enable pig iron producers to expedite deliveries and improve their service to consumers in general. (P.I.)

See *Cast Iron, Silicon.*

Pipe

See *Cast Iron, Centrifugal Casting.*

Refractories

INDUCTION FURNACES. *"Refractories Used in High-Frequency Electric Melting of Steel and Alloys,"* by B. W. Magalis, *The Refractories Journal,* vol. 16, no. 11, November, 1940, pp. 455-461. A description is presented of the use and types of induction furnaces as well as the requirements of the refractories used in their linings. Three methods are described for lining coreless induction furnaces. Acid ganister and basic linings also are described, and the process for using several miscellaneous types of linings is given. The importance of the selection of refractories for high-frequency electric melting of steel and alloys is emphasized. (R.)

Sand

FOUNDRY PROBLEMS. *"Sand and General Foundry Problems," Canadian Metals and Metallurgical Industries,* vol. 4, no. 4, April, 1941, pp. 87-88. One of the greatest difficulties encountered in sand is too high moisture, a condition that very frequently contributes to production of scrap castings. In selecting foundry sand, the shape of sand grains is probably not stressed as much today as it was a few years ago. The high surface finish can be produced quite readily provided the proper sand and bond strength are employed, along with certain other conditions. The foundry industry should continue to make progress in the technique of reclaiming and re-using sand. Whether it is more economical to replace sand or install equipment to remove fines depends upon the size of the foundry and upon operating conditions. General problems related to sand are pattern changes, molding machines, storage, slag and other materials that cause defective castings. (S.A.)

Steel

PRACTICE. *"Principles and Practice Involved in the Production of Steel Castings,"* by D. Clark, *Proceedings, Institute of Australian Foundrymen,* vol. 1, 1940, pp. 19-45. Herein is explained the electric furnace and converter methods of steel manufacture. A discussion is presented on synthetic and natural molding sands, fundamental facts in design of castings, the effect of mold face on castings, overcoming hot tears and machining difficulties and heat treatment and testing. (S.)

See also *Centrifugal Casting, Processes.*

Welding

See *Cast Iron, Welding.*

Book Reviews

Impact Cleaning, by William A. Rosenberg, cloth bound, 480 pp., 255 illustrations, 160 formulas, published by Penton Publishing Co., Cleveland, O. Price $7.00.

This book was written for the buyer and user of blast-type cleaning equipment to inform him on various phases of this operation. These facts presented by the author have been proved either by test, experience or theory. The book is divided into three sections, namely: nozzle-blast cleaning equipment; mechanical impact cleaning; and ventilation of impact cleaning equipment. Under the head nozzle-blast cleaning the author elaborates on, among other things, gravity-feed equipment, suction-feed equipment, steam-blast equipment and waterblast equipment. The mechanical impact cleaning division takes up centrifugal vs. airblast cleaning, batter-type wheels, slider-type wheels, vaneless type wheels and numerous other important factors concerned with this type of cleaning. Ventilation of impact cleaning equipment suggests ways and means of adequate dust removal, how to ventilate impact cleaning rooms and presents pertinent material on fan laws and electrical data. This book appears to be a good one for the purpose it is intended to serve and covers the field in such a manner that this publication would benefit any one connected with this type business or operation.

The Consumption and Use of Silica Sand in the Pacific Northwest, by H. Wilson and C. R. Pate, Bulletin, U. S. Bureau of Mines Station, Seattle, Wash.

This aims to give information regarding the use and sources of sand supply for foundries in the Pacific Northwest. The authors remark on the surprising lack of knowledge regarding local sands, and the lack of facilities for producing a uniform product from many local deposits. For the year ending September 1, 1937, the foundries of the Pacific Northwest consumed 28,471 tons of sand, but over half of this was obtained from outside sources including Belgium, Illinois, California and New Jersey.

High silica sands are difficult to obtain in the Pacific Northwest, although some occurs in Stevens County, Wash., and Latah County, Ida. A possible source is that washed from kaolin deposits, but it is said to be too friable for foundry use. The feldspathic silica sands obtainable locally are sometimes mixed with a naturally bonded sand from San Diego, Calif., and are used in iron foundries. For non-ferrous castings a local naturally-bonded sand is also used. Most of the smaller foundries are said not to have proper facilities for blending sands. The report includes tables showing the amount of sand used by different types of foundries, and the quantity obtained from different sources.

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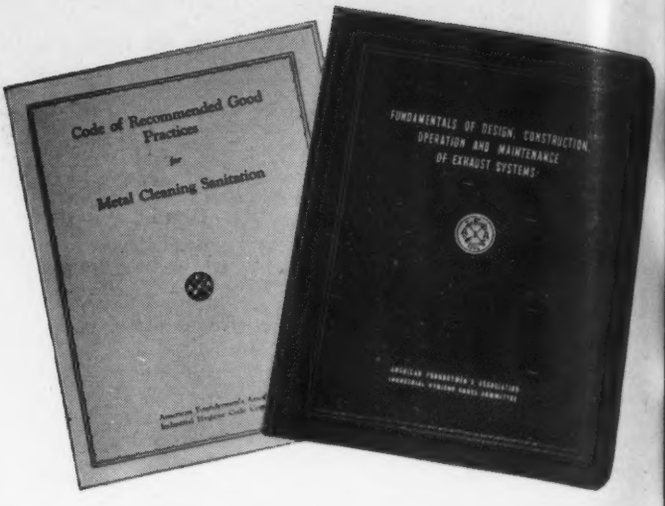

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